CHAPTER 18

SANITARY WASTE SYSTEMS

18-1. Minimum maintenance activities for sanitary waste systems

The tables that follow indicate items that must be performed to maintain systems and equipment at a minimum level of operational readiness. The listed action items should be supplemented by manufacturer-recommended maintenance activities and procedures for specific pieces of equipment.

18-2. General maintenance procedures for sanitary waste systems

Maintenance actions included in this section are for various modes of operation, subsystems, or components. Table 18-1 provides maintenance information for drain and vent systems. Table 18-2 provides maintenance information for packaged treatment equipment. Table 18-3 provides maintenance information for sewage lift stations and sewage sump units. Table 18-4 provides maintenance information for sanitary waste system instrumentation and electrical.

18-3. Effluent quality

Periodic fine-tuning of the wastewater treatment process is necessary to maintain effluent quality at the desired level. Table 18-5 summarizes the various adjustments that may be made based upon a visual inspection of the wastewater at selected points within the treatment process.

Table 18-1. Drain and vent system

Drain and Vent System	
Action	***Frequency***
General	
Clean and inspect all of the piping, valves, and components associated with the drain and vent system and report all discrepancies to supervisor. Inspect for the following:	
Leaking piping or fixture connections (seals, packing, etc.)	mo
Corrosion.	mo
Sagging or misaligned piping.	mo
Exercise all valves and perform routine maintenance as follows:	
Inspect packing gland and tighten as necessary. Verify correct position and operation.	mo
Check for leaking seals.	mo
Vents	
Check vent terminals and verify that no blockages exist. Flush with water.	yr
Waste Piping	
Clean all building drain and sewer piping with hand or power rodding equipment	6 mos
Floor Drains	
Visually inspect floor drain.	6 mos
Remove grate. Flush drain with water to ensure drain flows free.	6 mos
Manholes	
WARNING! SANITARY MANHOLES MAY CONTAIN HARMFUL GASES. PROVIDE ADEQUATE VENTILATION TO THIS SPACE PRIOR TO ENTRY.	
Remove manhole cover and visually inspect interior.	3 mos
Remove all debris and sediment and flush with water.	3 mos

Table 18-2. Packaged treatment equipment

Packaged Treatment Equipment	
Action	***Frequency***
General	
Clean all areas where sediment accumulates.	day
Adjust treatment equipment per manufacturers' recommendations to give the desired effluent quality. If manufacturer's data is not available, use Table 18-5 as a guide.	per mfg
Aeration System	
Balance diffuser air flow.	day
Inspect air valves for leaks.	mo
Inspect and lubricate blower.	mo
Inspect blower drive and belts for wear and tension.	week
Clean air filter.	mo
Sludge System	
Check sludge return rate.	day
Scrape hopper.	day
Effluent System	
Clean and check effluent weir.	day
Sample effluent for odor and clarity.	day

Table 18-3. Sewage lift station and sewage sump unit

Sewage Lift Station and Sewage Sump Unit	
Action	***Frequency***
Sewage Pumps	
Wash down pumps with a pressure hose to remove sludge buildup on the pump body.	6 mos
Remove the pumps from the sump or wet pit, and do the following:	
On submersible pumps, check and/or replace the following:	
Seal oil.	yr
Motor housing.	yr
Lower mechanical seal.	yr
Oil or air chamber.	yr
Upper mechanical seal.	yr
Bearing lid and lower bearing.	yr
Cable.	yr
Stator.	yr
Impeller.	yr
Volute.	yr
Bottom plate.	yr
Seal probe.	yr
Perform megohm resistance test between pump body and power leads. Resistance should be in the megohm.	yr
On vertical units, check and/or replace the following:	
Impeller.	yr
Volute.	yr
Bottom bearing,	yr
Intermediate bearings.	yr
Grease seal.	yr
Packing.	yr
Shaft	yr
Lubricate bearings.	yr
Reinstall pumps into wetwell or sump, and check direction of pump rotation.	yr

Table 18-3. Sewage lift station and sewage sump unit (continued)

Sewage Lift Station and Sewage Sump Unit	
Action	***Frequency***
Check function of check valves (pump turns backwards or pump shuts off when check valves are bad).	yr
Check amps while pump is running and fully submerged. Compare with nameplate or technical data and check setting of overloads in control panel.	6 mos
Wet Pit or Sump	
WARNING! WET PITS AND SUMPS MAY CONTAIN HARMFUL GASES. PROVIDE ADEQUATE VENTILATION TO THESE SPACES PRIOR TO ENTRY.	
Remove any buildup of sediment and sludge in the bottom of the wet pit or sump.	3 mos
Controls	
Check the float switches for sludge buildup. Lift the switches from the pit and clean. After cleaning, visually inspect and allow to operate in sequence for proper pump operation.	3 mos
Check control panel for functioning check for moisture or corrosion.	3 mos

Table 18-4. Sanitary waste system instrumentation and electrical

Sanitary Waste System Instrumentation & Electrical	
Action	***Frequency***
Level Gauges	
Check for accuracy. Remove manhole cover and check gauge reading against calibrated dipstick. Recalibrate as required following equipment manufacturer's instructions.	yr
Pressure Gauges	
Isolate gauge by closing the proper valves. Remove and check in a fixture against a calibrated gauge. Adjust as required following equipment manufacturer's instructions.	yr
Transmitters and Controllers	
Calibrate and adjust in accordance with the manufacturer's recommendations.	yr
Motors	
Check and clean cooling airflow passages on electric motors as necessary so that nothing obstructs airflow.	6 mos
All Electrical Devices	
Check, clean, and tighten terminals at motors, starters, disconnect switches, etc.	6 mos
Wiring	
Check insulation on conductors in starters, switches, and junction boxes at motors for cracks, cuts, or abrasions. Replace wiring as required and correct cause of damage.	6 mos

Table 18-5. Effluent quality

Influent Color	Aeration Tank Color	Settling Tank Color	Color of Return Sludge	Odor	Condition	Adjustment
Gray	Chocolate brown	Clear	Chocolate brown	Earthy	Good operation	None
Gray	Chocolate brown	Clear	Chocolate brown	Earthy	Excessive foaming	Install or operate spray system
Gray	Chocolate brown	Clear	Chocolate brown	Musty	Floating lumps of grease in settling tank	Skim settling tank frequently. Clean or install grease trap.
Gray	Chocolate brown	Clear	Chocolate brown	Musty	Layer of sludge visible near surface of settling tank.	Increase sludge return rate. Scrape hopper.
Gray	Chocolate brown	Murky	Light brown	Slightly musty	Solids in effluent.	Reduce sludge return rate.
Gray	Light brown	Light brown	Light brown	Slightly septic	Floating solids in settling compartment.	Scrape hopper. Skim settling tank.
Gray	Light brown	Light brown	----	None	No sludge return.	Backwash sludge return. Scrape hopper.
Gray	Light brown	Brown slime floating on surface	Light brown	Slightly septic	Plant underloaded	Reduce running time.
Gray	Light brown	Black	Black	Musty	Inadequate return of sludge.	Increase sludge return rate.
Gray	Light brown	Clear	Light brown	None	Uneven tank roll.	Adjust valves until roll (mixing) is uniform.
Gray	Gray	Murky	Gray	None	Insufficient solids in plant.	Increase aeration. Increase sludge return rate.
Gray	Red	Reddish	Light brown	Septic	Over-aeration.	Reduce aeration.
Gray	Black	Black	Black	Septic	Insufficient aeration.	Increase aeration.
Gray	Black	Black	----	Septic	No air rising in tank. Blower not running.	Press reset on starter. Check V-belt. Check circuit breaker. Check power.
Black	Black	Black	Black	Septic	Septic wastewater.	Max aeration. Check influent for toxic material (bleach, gasoline, etc.